PROOF OF EVIDENCE FOR LB BROMLEY

PROOF OF EVIDENCE OF DANI FIUMICELLI (NOISE)

Land at London Electricity Board Depot, Churchfields Road, Beckenham, BR3 4QZ

PINS REF NO:
APP/G5180/W/25/3365514

Reference: 14608.RP01.EIA.1
Prepared: 22 July 2025
Revision Number: 1

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Revision	Comment	Date	Prepared By
0	Draft First issue of report	21 July 2025	Dani Fiumicelli MSc, BSc(Hons), MIOA & MCIEH
1	Proof of Evidence	22 July 2025	Dani Fiumicelli MSc, BSc(Hons), MIOA & MCIEH

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The recommendations within this report relate to acoustics performance only and will need to be integrated within the overall design by the lead designer to incorporate all other design disciplines such as fire, structural integrity, setting-out, etc. Similarly, any sketches appended to this report illustrate acoustic principles only and will need to be developed into full working drawings by the lead designer to incorporate all other design disciplines.

RBA ACOUSTICS

LONDON
44 Borough Road
London, SE1 0AJ
T. +44 (0) 20 7620 1950

MANCHESTER
Bloc, 17 Marble Street
Manchester, M2 3AW
T. +44 (0) 161 661 4504

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1. PERSONAL DETAILS & EXPERIENCE

1.1 My name is Dani Fiumicelli. I am a Member of the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH).

1.2 I was awarded the CIEH Diploma in Environmental Health in 1996 and an MSc in Environmental Acoustics by the South Bank University in 1996.

1.3 I was an Environmental Health Officer in local government in London from 1986 to 2002 and have been an been an acoustic consultant in private practice since then.

1.4 I was chair of a committee set up by the Institute of Acoustics the Association of Noise Consultants and the Chartered Institute of Environmental health which published good practice guidance regarding noise sensitive development in May 2017 and am a member of The IoA's Environmental Noise Committee and the CIEH's advisory Noise Satellite Panel.

1.5 I am an Associate at RBA Acoustics Ltd, a company whose services include specialising in the field of acoustics, noise, and vibration. I was awarded the Chartered Institute of Environmental Health Diploma in Environmental Health in 1996 and an MSc in Environmental Acoustics from the Southbank University in 1996. I was an Environmental Health Officer in London from 1996 to 2002 and have been an acoustic consultant in private practice since then.

1.6 I was chair of a committee set up by the Institute of Acoustics the Association of Noise Consultants and the Chartered Institute of Environmental health which published good practice guidance regarding noise sensitive development in May 2017 and am a member of IOA's Environmental Nose Committee and the CIEH's Noise Advisory Satellite Panel.

1.7 I have a wide range of experience in all technical aspects related to acoustics and have managed numerous projects as well as presenting evidence at planning committees and appeals, legal proceedings, public inquiries and House of Commons and Scottish Parliament Scrutiny Committees.

1.8 I have presented technical papers and written articles nationally and internationally on noise and acoustics covering a wide range of aspects.

1.9 My overall project experience includes being the project director or manager and participant in Environmental Impact Assessments for commercial and industrial developments, construction and demolition projects, residential schemes, schools, airports, road transport, guided transport (trams and buses), light and heavy railway projects, renewable energy, hospital development, mixed developments, harbour developments, leisure developments and sport stadiums.

1.10 I have visited the Masons site and am familiar with the nature and character of the vicinity and have viewed the existing layout and the spatial relationships with the nearby noise sensitive receptors.

1.11 I have also carried out a baseline noise survey in the rear garden of a property directly facing the enforcement site for a period of seven days. This data has been shared with the appellant's acoustic advisor.

2. STATEMENT OF TRUTH & DUTY TO THE APPEAL AND DECISION MAKER

2.1 I acknowledge my duty to the Appeal and the decision maker and that I have complied with that duty. I am also aware of the requirements of Part 35 of the CPR, Practice Direction 35 and the Guidance for the Instruction of Experts in Civil Claims 2014.

2.2 I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth."

Signed :  ……

Dani Fiumicelli

Date: 21 July 2025

3. INSTRUCTION AND REASONS FOR THE ENFORCEMENT NOTICE AND REFUSAL OF PLANNING PERMISSION

3.1 I have been instructed by Ms Karen Day on behalf of the London Borough of Bromley to provide noise expert witness services regarding the enforcement appeal "A" (23/00705/OPDEV) and s78 planning appeal "B" (24/00815/FULL2) Site/Development: Masons Scaffolding, at London Electricity Board Depot, Churchfields Road, London. This proof provides my evidence in relation to this appeal.

3.2 Appeal A is in response to a planning enforcement notice with the following amended reason:

"It appears to the Council that the above breach of planning control has occurred within the last 10 years.

The dual use of Class B8 (scaffolding equipment storage/distribution) and Sui Generis (electricity undertaker's depot) represents a significantly more intensive use of the site which has a detrimental impact on the general residential amenities of the area, resulting in additional noise and disturbance associated with the comings and goings to and from the site and unacceptable impact on highways safety that cannot be successfully mitigated or controlled.

The proposal is thereby contrary to Policies 32, 37 and 119 of the Bromley Local Plan and Policies D3 and D14 of the London Plan."

3.3 Appeal B is in response to a refusal of planning permission with the following reason:

"*The proposal as set out in the application and currently in operation represents a significantly more intensive use of the site which has a detrimental impact on the general residential amenities of the area, resulting in additional noise and disturbance associated with the comings and goings to and from the site, as well as the activities upon the site itself, and insufficient information has been provided to demonstrate that the impact of the use on the residential amenities of the area and with regards to highways safety could be successfully mitigated and controlled. The proposal is thereby contrary to Policies 32, 37 and 119 of the Bromley Local Plan and Policies D3 and D14 of the London Plan*."

3.4 I am aware that the Council's position is that the use of the site for scaffolding equipment storage and distribution has a detrimental impact on residential amenity and that the appellant has not provided sufficient information to demonstrate that the adverse impact of the use on the residential amenities of the area could be successfully mitigated and controlled. I am also aware that the appellant's case is that there is no adverse impact on residential amenity.

4. PLANNING POLCY AND GUIDANCE

4.1 Noise Policy Statement for England

4.1.1 The Department for Environment Food and Rural Affairs (2010) *Noise Policy Statement for England* (NPSE) (CD11.01) seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The statement applies to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise.

4.1.2 The statement sets out the long-term vision of the government's noise policy, which is to "promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development".

4.1.3 This long-term vision is supported by three aims:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life; and
- Where possible, contribute to the improvements of health and quality of life.

4.1.4 The long-term policy vision and aims are designed to enable decisions to be made regarding what is an acceptable noise burden to place on society.

The Explanatory Note within the NPSE provides further guidance on defining "significant adverse effects" and "adverse effects" using the following concepts:

- No Observed Effect Level (NOEL) – the level below which no effect can be detected. Below this level no detectable effect on health and quality of life due to noise can be established;
- Lowest Observable Adverse Effect Level (LOAEL) – the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) – the level above which significant adverse effects on health and quality of life occur.

4.1.5 The three aims can therefore be interpreted as follows:

- The first aim is to avoid noise levels above the SOAEL;
- The second aim considers situations where noise levels are between the LOAEL and SOAEL. In such circumstances, all reasonable steps should be taken to mitigate and minimise the effects. However, this does not mean that such adverse effects cannot occur; and
- The third aim considers situations where noise levels are between the LOAEL and NOEL. In these circumstances, where possible, reductions in noise levels should be sought through the pro-active management of noise.

4.1.6 The NPSE recognises that it is not possible to have single objective noise-based measures which define the SOAEL, LOAEL and NOEL and that are applicable to all sources of noise in all situations. The levels are likely to be different for different noise sources, receptors and at different times of the day.

4.2 National Planning Policy Framework

4.2.1 The Ministry for Levelling Up, Housing and Communities (2024) *National Planning Policy Framework* (NPPF)(CD11.02), sets out the Government's planning policies for England. In respect of noise, Paragraphs 187, 198 and 200 of the NPPF state the following:

> *"187 Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.*
>
> *198) Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> a. *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
> b. *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*
>
> *200) Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."*

4.2.2 The above presents no quantitative guidance on a site's suitability for residential development and we have therefore, for the purposes of this assessment, referred to the following documents.

4.3 Planning Practice Guidance (Noise)

4.3.1 The Ministry of Housing, Communities and Local Government (2014) *Planning Practice Guidance (Noise)* (PPG(N)) (CD11.03) "*advises on how planning can manage potential noise impacts in new development*" and provides guidelines that are in line with the NPPF. The guidance is an online resource and was last updated on 22 July 2019.

4.3.2 The PPG(N) states that local planning authorities should:

"take account of the acoustic environment and in doing so consider:

- *Whether or not a significant adverse effect is occurring or likely to occur;*
- *Whether or not an adverse effect is occurring or likely to occur; and*
- *Whether or not a good standard of amenity can be achieved."*

4.3.3 The guidance uses the same concepts of adverse effect levels as the NPSE, and these are provided in full in Table 1 below.

4.3.4 The guidance recognises that the use of the word "level" does not mean that a single number value will necessarily be appropriate in determining the effects of noise exposure. Rather, factors to be considered in determining whether noise is a concern can include the absolute noise level of the source, the existing ambient noise climate, time of day, frequency of occurrence, duration, character of the noise and cumulative effects.

4.3.5 With particular regard to mitigating noise effects on residential development the PPG(N) highlights that effects may be partially offset if residents have access to a relatively quiet façade as part of their dwelling or a relatively quiet amenity space (private, shared or public).

Table 1 – Noise Exposure Hierarchy Table from PPG(N)

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not noticeable	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid through use of appropriate mitigation whilst taking into account the social and economic benefit
Unacceptable Observed Adverse Effect Level			
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent through use of appropriate mitigation

4.4 The London Plan

4.4.1 The Greater London Authority (2021) *The London Plan* policies D13 Agent of Change and D14 Noise provide outline guidance for the assessment and approach to noise within London Boroughs. The Plan does not provide criteria to be achieved but does reference the guidance provided in BS 4142:2014+A1 2019 (see the next section of this evidence).

4.4.2 Important to note is that the London Plan is increasingly being adopted by Local Authorities as a benchmark for good acoustic design.

Policies D13 and D14 from the London Plan is reproduced below:

Policy D13 – Agent of Change states:

A. "The Agent of Change principle places the responsibility for mitigating impacts from existing noise and other nuisance-generating activities or uses on the proposed new noise-sensitive development. Boroughs should ensure that Development Plans and planning decisions reflect the Agent of Change principle and take account of existing noise and other nuisance generating uses in a sensitive manner when new development is proposed nearby.

B. Development should be designed to ensure that established noise and other nuisance generating uses remain viable and can continue or grow without unreasonable restrictions being placed on them.

C. New noise and other nuisance-generating development proposed close to residential and other noise-sensitive uses should put in place measures to mitigate and manage any noise impacts for neighbouring residents and businesses."

Policy D14 Noise

A In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:

1) avoiding significant adverse noise impacts on health and quality of life

2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change

3) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses

4) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)

5) separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation

6) where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles

7) promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.

B Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations.

4.5 LB Bromley Local Plan

4.5.1 The LB Bromley Local Plan includes noise in the policies reproduced below.

Policy 37 – General Design of Development:

"All development proposals, including extensions to existing buildings, will be expected to be of a high standard of design and layout. Developments will be expected to meet all of the following criteria where they are relevant: e - Respect the amenity of occupiers of neighbouring buildings and those of future occupants, providing healthy environments and ensuring they are not harmed by noise and disturbance, inadequate daylight, sunlight, privacy or by overshadowing;"

Policy 119 - Noise Pollution states:

"In order to minimise adverse impacts on noise sensitive receptors, proposed developments likely to generate noise and or vibration will require a full noise/ vibration assessment to identify issues and appropriate mitigation measures.

In most cases where there is a risk of cumulative impact on background level over time or where an area is already subject to an unsatisfactory noise environment, applicants will be required to ensure that the absolute measured or predicted level of any new noise source is 10dB below the existing typical background LA90 noise level when measured at any sensitive receptor."

4.5.2 The Pollution Team of London Borough of Bromley has produced a Noise Technical Guidance (NTG) titled 'Planning requirements for noise'. Which includes the following:

"A noise generating or noise sensitive development should include an assessment to demonstrate how it prevents, or minimises to an acceptable level, all adverse noise impacts. Assessment of these impacts should have regard to the advice contained within the Department for Environment Food and Rural Affairs (DEFRA) Noise Policy Statement for England (NPSE), March 2010, or its recognised replacement. Development will not be permitted where levels above the Significant Observed Adverse Effect Level (SOAEL) exist, and mitigation measures have not been proposed that will reduce impacts to as near to the Lowest Observed Effect Level (LOAEL) as is reasonably possible. Mitigation measures should not render the design and amenity spaces unacceptable."

4.5.3 Section 7 of the NTG specifically covers 'Industrial and Commercial Noise Sources'. It states that BS4142 should be used to assess the potential noise impact and where the Rating Level does not exceed the prevailing background sound level, this is an indication of the specific sound source having a low impact, depending on context.

4.5.4 The NTG goes on to say:

'The design objective should be that the development is designed to achieve a rating level of 10dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Where uses generate high noise levels of a short duration (e.g., loud bangs) on a regular basis, these should aim to be controlled so as not to exceed 60 dB (LAmax) at the façade of nearest noise sensitive location. Where this criterion cannot be achieved, the various noise control measures considered as part of the assessment should be fully explained (i.e., relocation of noise sources, use of quieter equipment, enclosures, screening, restriction of the hours of operation etc.) and the achievable noise level should be identified. This information will allow the council to make a judgement regarding the application and its likely impact on the surrounding area. In addition to the above, maximum noise levels should also be adequately controlled.'

4.5.5 Regarding deliveries and collections the NTG states:

'Deliveries and collections are usually controlled by restricting operational hours but depending on the extent of these activities, a Noise Management Plan (NMP) may be required, which would include an assessment of noise. This would usually involve assessing the noise upon arrival, loading/unloading period and then departure. Where applicable, the noise assessment will take account of multiple noise sources operating simultaneously and the cumulative level of these.'

5. RELEVANT NOISE STANDARDS

5.1 British Standard 4142:2014+A1:2019: Methods for rating and assessing industrial and commercial sound.

5.1.1 The British Standard *BS 4142:2014+A1:2029 Methods for rating and assessing industrial and commercial sound* (CD11.04) is relevant to this case as it describes methods for rating and assessing sound of an industrial and/or commercial nature, which include:

- sound from industrial and manufacturing processes
- sound from fixed installations which comprise mechanical and electrical plant and equipment
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

5.1.2 The methods described within BS4142:2014 use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

5.1.3 The assessment method described in BS4142:2014 is based on the continuous equivalent sound pressure level produced by a specific source ($L_{Aeq,Tr}$) at the assessment location. Appropriate corrections allowing for any tonality, impulsivity, other characteristics or intermittency of the specific sound source that may enhance the impact of the sound are then applied to derive the rating level ($L_{Ar,Tr}$).

5.1.4 The standard provides three methods for obtaining the character corrections which are an initial subjective listening method for tones and impulsivity, an intermediate objective method of relatively coarse resolution for tones (but not for impulses) based on the 1/3 octave frequency profile of the sound in question and sophisticated reference methods based using fine resolution analysis methods when the degree of tonality or impulsivity of a sound in question is queried. The penalties associated with the subjective methods are reproduced below.

Table 2:BS 4142 Subjective Character Corrections to Obtain the Rating Level

Characteristic	Description	Penalty
Tonality	Just perceptible	+2
	Clearly perceptible	+4
	Highly perceptible	+6
Impulsivity	Just perceptible	+3
	Clearly perceptible	+6
	Highly perceptible	+9
Intermittency	Identifiable on/off conditions over assessment period and readily distinctive against the residual acoustic environment	+3
Neither tonal, impulsive or intermittent	Readily distinctive against the residual acoustic environment	+3

5.1.5 The standard advises that where such characteristics are present that corrections for tones, impulses and intermittency can be added linearly to form a cumulative overall correction value, but the correction for the sound being readily distinctive against the residual acoustic environment" is only applicable when neither tones, impulses or intermittent characteristics are present.

5.1.6 Having added correction for acoustic characteristics the rating level is then compared to the background sound level ($L_{A90,T}$) to produce the relative difference, or excess of rating level over background sound level. BS4142:2014 quantifies the estimated impact from the excess as:

a. *Typically the greater this difference, the greater the magnitude of impact.*
b. *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
c. *A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.*
d. *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.*

5.1.7 The difference between the rating level of the noise in question and the background noise level is described as an initial assessment. The standard requires that this is reviewed in terms of the "context" that the sound occurs in. The context evaluation can result in the assessment of the noise being unchanged or changed to a more or a less adverse or favourable conclusion depending on the outcome.

5.1.8 Clause 11 of the standard advises the following:

"The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context."

Clause 11 goes on to say that:

"Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following.

1) The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night. Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.

2) The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/ or commercial nature is likely to be perceived and how people react to it.

NOTE 3 Consideration should be given to evidence on human response to sound and, in particular, industrial and/or commercial sound where it is available. A number of studies are listed in the "Effects on humans of industrial and commercial sound" portion of the "Further reading" list in the Bibliography. 3) The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:

i) facade insulation treatment;

ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
iii) acoustic screening.

5.1.8 The contextual assessment is not restricted to the three areas identified in Clause 11 of BS 4142 reproduced above. The EA Method Implementation Document lists the following as point

- what the sound 'means'
- weekdays versus weekends
- time of day
- the absolute level of sound
- where the sound occurs
- new industry or new residences
- intrinsic links between the source and receptor
- local attitudes
- the residual acoustic environment
- the land use at the receptor (for example, gardens versus yards)
- the exceedance (traditional BS 4142)
- plus whatever else might be particular to that individual situation

6. RBA BASELINE NOISE SURVEY

6.1 RBA undertook an external noise survey at the rear of a property on Clockhouse Road directly opposite Mason Scaffolding between 10:00 hours Wednesday 2nd and 08:30 hours Tuesday 8th July 2025.

6.2 During the installation and collection of the noise equipment sound I heard at the rear of the houses on Clockhouse Road consisted of intermittent train noise lasting from 20 to 45 seconds up to eight times in an hour, aircraft overflight, bird song and local traffic on Clockhouse Road. On both occasions I clearly heard the sound of metal on metal "clangs" which I perceived as coming from scaffolding being bumped together on the Masons site. In addition, during the installation of the noise equipment I heard the sound of a dull thud followed by a scraping sound which was noticeably less loud than the sound of metal on metal I heard. I am familiar with the operation of the refuse and recycling centre and the sound was similar to what I have heard when witnessing the "JCB" backhoe type plant on site moving waste from the bays where the public dump it, to the storage areas and from the storage areas onto vehicles for dispatch off site.

6.3 The data includes noise from all sources including Masons.

6.4 The raw data from this noise survey was provided to WIE by email on the 18th July 2025.

6.5 The level and character of sound at a receptor is rarely constant and will vary from moment to moment, minute to minute, hour to hour, day to day, etc. Consequently, the science of acoustics has developed a range of different noise metrics to describe this complex and rapidly changing soundscape as more easily understood single figure number. However, these simplified metrics are limited in the information they convey so a range of metrics is normally required to obtain a more complete appreciation of the acoustics of a specific location. The metrics most commonly used to describe environmental sounds are summarised below.

- **LAeq,T** - The level of a notional steady sound which, over a stated period of time, *T*, would have the same acoustic energy as the fluctuating noise measured over that period. Known as the continuous equivalent noise level Typically used to represent the overall total ambient noise level.
-
- **LA90,T** - A statistical descriptor that represents the sound level exceeded for 90% of period T e.g. during a 1 hour period the LA90,T is the noise level exceeded for 54 minutes. The LA90,T descriptor can be used to represent a typical minimum level during the period T and is often used to the describe underlying background noise.
- **LAmax,T** - The instantaneous maximum A-weighted sound pressure level which occurred during the measurement period, *T*. It is commonly used to measure the effect of very short duration bursts of noise, e.g. sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the ambient and background levels.

6.6 Presented in Table 3 to **Error! Reference source not found.** are the results of the RBA baseline noise survey. The data are sampled at 15-minute intervals and include the time periods used in the WIE report.

L_{Aeq}

Table 3 – Measured L_{Aeq} Levels

Day	Period	Measured $L_{Aeq,15min}$ (dB)			
		Minimum	Maximum	Mean	Mode
Weekday	07:00 – 19:00	49	65	53	53
	07:00 – 18:30	49	65	53	53
	06:30 – 07:00	52	55	53	52
Saturday	07:00 – 19:00	50	60	53	52
	07:30 – 16:00	50	55	52	52
Sunday	07:00 – 19:00	38	67	50	48
	08:00 – 13:00	41	67	51	N/A

6.7 The table above shows LAeq,T noise levels which if they persisted continuously for the duration of each periods would contain the contain the same amount of overall noise energy as the actual fluctuating noise level during that period. It can be regarded as analogous, but not the same as, the average noise level during the period in question.

L_{A90}

Table 4 – Measured $L_{A90,15min}$ Levels

Day	Period	Measured $L_{A90,15min}$ (dB)			
		Minimum	Maximum	Mean	Mode
Weekday	07:00 – 19:00	34	45	39	37
	07:00 – 18:30	34	45	39	39
	06:30 – 07:00	35	47	40	N/A
Saturday	07:00 – 19:00	38	42	40	40
	07:30 – 16:00	38	42	40	39
Sunday	07:00 – 19:00	31	41	35	36
	08:00 – 13:00	34	41	36	35

6.8 The table above shows LA90,T noise levels that represent the sound level exceeded for 90% of the period T e.g. during a 1 hour period the LA90,T is the noise level exceeded for 54 minutes. The LA90,T descriptor can be used to represent a typical minimum level during the period T and is often used to the describe underlying background noise.

$L_{Amax,fast}$

Table 5 – Measured $L_{Amax,fast,15min}$ Levels

Day	Period	Measured $L_{Amax,fast,15min}$ (dB)			
		Minimum	Maximum	Mean	Mode
Weekday	07:00 – 19:00	67	98	73	72
	07:00 – 18:30	67	98	73	72
	06:30 – 07:00	67	76	72	N/A
Saturday	07:00 – 19:00	69	84	73	71
	07:30 – 16:00	69	83	72	71
Sunday	07:00 – 19:00	52	94	68	69
	08:00 – 13:00	60	94	71	N/A

6.9 The table above shows the instantaneous maximum A-weighted sound pressure level which occurred during the measurement period, *T*. It is commonly used to measure the effect of short duration bursts of noise, e.g. sudden bangs, shouts, car horns, emergency sirens, the peak noise during a road vehicle, aircraft or train movement etc. which audibly stands out from the ambient and background levels.

6.10 The train movements on the railway between the rear of the properties on Clockhouse Road and the Masons site influence the measured noise levels, in particular the LAeq,T and LAmax, T noise levels.

6.11 However, whilst train noise may make a substantial contribution to the LAeq,T noise levels and cause the LAmax, T noise levels, it is not the most prevalent sound at the rear of the houses on Clockhouse Road as the trains were audible for no more than 45 seconds at the measurement location and in any one hour there is a considerable majority of the time when there are no trains audible in which noise from Masons can occur and have impacts, as shown in the tables below.

Table 6 – Train movements on the Hayes line (from the Southeastern rail current timetable[1])

Period	No. of trains		
	Sunday	Saturday	Weekday
0600 – 0630	0	2	2
0630 – 0700	0	3	4
0700 – 0800	1	8	8
0800 – 0900	3	8	9
0900 – 1900	4	8	8

[1] Available at https://timetables.southeasternrailway.co.uk/#/timetables/3538/Table%206a (last viewed 18th July 2025)

Period	Minutes in an hour with train sound		
	Sunday	Saturday	Weekday
0600 – 0630	0	1.5	1.5
0630 – 0700	0	2.25	3
0700 – 0800	0.75	6	6
0800 – 0900	2.25	6	6.75
0900 – 1900	3	6	6
Period	% of an hour with train sound		
	Sunday	Saturday	Weekday
0600 – 0630	0	2.5	2.5
0630 – 0700	0	3.75	5
0700 – 0800	1.25	10	10
0800 – 0900	3.75	10	11.25
0900 – 1900	5	10	10
Period	Minutes in an hour without train sound		
	Sunday	Saturday	Weekday
0600 – 0630	60	58.5	58.5
0630 – 0700	60	57.75	57
0700 – 0800	59.25	54	54
0800 – 0900	57.75	54	53.25
0900 – 1900	57	54	54
Period	% of an hour without train sound		
	Sunday	Saturday	Weekday
0600 – 0630	100	97.5	97.5
0630 – 0700	100	96.25	95
0700 – 0800	98.75	90	90
0800 – 0900	96.25	90	88.75
0900 – 1900	95	90	90

6.12 Because the train noise only occurs for a small minority of any hour i.e. typically less than 10%, it has very little if any influence on the LA90,T background noise level which is a statistical descriptor of the noise level exceeded for 90% of the time. Whereas the LAeq,T ambient noise level is strongly influenced by the short duration but intense nature of the train noise.

6.13 Because for the substantial majority of any hour there is no train noise the acoustic conditions during the periods with no train noise characterises the typical sound environment at the rear of the houses on Clockhouse Road. During the extended periods with no train noise, notwithstanding any noise from the Masons site, the location is a tranquil and relatively quiet example of a sub-urban predominantly residential area.

6.14 To be clear I recognise that there is train noise in the locality, but this does not characterise the acoustic climate of the area because it is short term, intermittent and there are large gaps between “up” and “down” trains when there is no train noise. Consequently, the train noise does not define the acoustic character of the neighbourhood.

6.1 Comparison to WIE Background L_{A90} Levels

6.1.1 The mean-average of the 15 minute noise levels measured for each period are considered representative of typical L_{A90} background levels at the rear of properties on Clock House Road directly opposite the Masons site.

6.1.2 The mean-average level measured by RBA is presented in the table below, alongside the equivalent WIE level.

Table 7 – Comparison of the RBA Measured $L_{A90,15min}$ Level

Operational Period		WIE L_{A90} Level Used	RBA Mean-Average L_{A90} Level	Difference between RBA and WIE Mean-Average L_{A90} Level dBA (a minus value means the RBA level is lower)
Weekday	07:00 – 18:30	42	39	-3
	06:30 – 07:00		40	-2
Saturday	07:30 – 16:00	40	40	0
Sunday	08:00 – 13:00		36	-4

6.1.2 The background level measured by RBA between 0630 and 0700 hrs during the weekday period is 3 dB lower than the level used by WIE. For Saturday, the levels are consistent, although the RBA background level on Sunday are 4 dB lower than those used by WIE.

6.1.3 The reasons for the RBA background noise levels being lower than the equivalent WIE values on weekdays and Sundays are not obvious. This is likely to be due to the WIE values being measured at the perimeter of the Masons site and therefore closer to activity on site so levels are higher at this point compared to at the rear of the houses on Clockhouse Road.

6.1.4 The difference between the RBA and WIE measured background noise levels is important because the lower the background noise level the greater the impact of the noise from Masons yard when assessed using the BS 4142 methodology which compares the noise from the activity in question with the background noise level (as discussed in section 10 of this evidence. In essence the lower the background noise I compared to the noise in question the more readily it is distinguished from the underlying sound in the area and the greater the intrusion of the noise in question and the associated disturbance of health and quality of life.

7. REVIEW OF APPELLANT'S NOISE SUBMISSIONS

7.1 The appellant has submitted two noise reports, as follows.

Clement Acoustics – 12th March 2024 (CA)

7.2 The Clement Acoustics (CA) report is superseded by the Waterman Infrastructure and Environment Ltd (WIE) issued after the decision to refuse planning permission. The WIE Report is discussed in detail in the following part of this section of my evidence. A reason for the CA report being superseded by the WIE report is that the CA report includes consideration of the noise from two diesel engine forklift trucks and the WIE report is based on these being replaced by electric powered forklifts with lower noise emissions.

7.3 The WIE report adopts the baseline noise levels from the CA report, which are augmented by a further survey undertaken by WIE which produced revised data for the daytime weekend operational hours period.

7.4 Notwithstanding the CA report has been superseded I view it as not providing sufficient information to demonstrate that the adverse noise impact of the use on the residential amenities of the area could be successfully mitigated and controlled, for the following reasons:

- The baseline survey only covers the period from 1050 am on the morning of the Thursday 16th January 2024 to 1050 am on the morning of Saturday 18th January 2024. This doesn't include a Sunday and whilst there is no ideal duration for a baseline survey a longer survey covering the whole of the a 7 day week would provide a bigger database from which to derive representative baseline noise levels with a greater understanding of the variability around "averaged" values.
- The noise modelling is simplistic and only considers a single noise source in only one position in approximately the middle of the site. Whereas the reality of the site operations is that there can be more than one source in operation at a stime and some sources are closer to the residential receptors on Clockhouse Road than assumed in the CA report.
- The assumptions regarding acoustic character corrections are confused as demonstrated in the extract from the second paragraph in section 6.3 reproduced below:

  "*As the proposed plant installation includes loading and unloading of metallic items, a certain amount of impulsivity could be expected. A +3 dB penalty for tonal noise emissions has been included, which is considered suitably robust as mitigation will be designed to ensure there is no adverse impact*.

  No tonal content would be expected from the assessed operations."

  Whilst it is agreed that "*a certain amount of impulsivity could be expected*" there is no clear penalty applied. BS 4142 would permit application of a penalty of up to +9dB for impulsive character in sound.

  The application of a tonal penalty of +3 dB is also agreed (although WIE do not do this – see the next section of my evidence).
- Although the extract from the CA report above includes reference to mitigation being designed to ensure there is no adverse impact there is no detail of what that mitigation would be, how much noise reduction it would provide or an assessment of what might be the residual impact after the mitigation is in place.
- The CA report provides no consideration of the impact of noise accessing and leaving the Masons Site.

Waterman Infrastructure & Environment Ltd – 31st March 2025 (WIE)

7.5 In sections 3.7-3.8 of the WIE report, the noise assessment criteria are summarised including WIE ascribed sematic descriptors of the potential magnitude of impact without context purportedly based on the advice of BS 4142:2014+A1:2019 - Methods for rating and assessing industrial and commercial sound. Section 10 of this report discusses the BS 4142 standard in more detail and provides my own assessment based on this standard.

7.6 This is presented in Table 8 below, along with the RBA definition of the BS 4142 criteria based on the policy terms NOEL, LOAEL, SOAEL and UAEL i.e.

NOEL = No Observed Adverse Effect Level (Noise Policy Statement For England - NPSE),
LOAEL = Lowest Observed Adverse Effect Level (NPSE, National Planning Poly Framework - NPPF and National Planning Practice Guidance - NPPG),
SOAEL = Significant Observed Adverse Effect Level (NPSE, NPPF and NPPG); and,
UAEL = Unacceptable Adverse Effect Level (NPPG). .

Table 8 – Noise Assessment Criteria

Potential Magnitude of Impact Without Context – WIE terminology	Rating Level dB $L_{Ar,Tr}$ (without context) Compared to Background Sound Level (L_{A90}) – BS 4142 terminology	WIE Definition	RBA Definition Using Policy Terms
None	Rating Level ≤ L_{A90} - 10	London Borough of Bromley's preference	NOEL
Negligible (low[1])	Rating Level ≤ L_{A90}	The rating level is not of concern. ≤NOEL.	≤ LOAEL
Small	Rating Level ≤ L_{A90} + 5dB	The rating level is undesirable but of limited concern. >NOEL ≤LOAEL.	> LOAEL ≤ SOAEL
Medium	Rating Level > L_{A90} + 5dB	The rating level gives rise to some concern but is likely to be tolerable depending on scale, duration and period of operation (day/night). >LOAEL <SOAEL.	> LOAEL ≤ SOAEL
Large	Rating Level ≥ L_{A90} + 10dB	The rating level gives rise to serious concern and it should be considered unacceptable. ≥SOAEL.	> UAEL

Note 1: BS 4142 terminology

7.6 The key aspect to understand from the above comparison of definitions is that the WIE definitions are potentially understating the magnitude of the noise impact. This is because BS 4142 describes the impact of the difference between the rating level of the noise in question and the representative background noise level as follows (my emphasis):

b. *Typically the greater this difference, the greater the magnitude of impact.*
c. *A difference of around +10dB or more is likely to be an indication of a **significant adverse impact**, depending on the context.*
d. *A difference of around +5dB is likely to be an indication of an **adverse impact**, depending on the context.*
e. *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a **low impact**, depending on the context.*

7.6 The comparison between the WIE and the RBA interpretation of the degree of impact of the difference between rating level and background noise level in table 8 above shows that WIE are ascribing effects NOEL, LOAEL and SOAEL at a category of difference between rating level and background noise level above that which RBA are using.'

7.7 By ascribing effects as NOEL, LOAEL and SOAEL at a category of difference between rating level and background noise above that which RBA are using the WIE report produces some anomalous assessments that I consider to be underestimates of impact.

7.8 For example, in table 6.10 at page 21 of the WIE report a rating level difference of +7 to +9 dB for pole cutting is described as a "medium" "impact with context" which with localised screening reduces to "small". Notwithstanding the discussion later in this evidence that I consider this rating level difference to be underestimated, a difference of +7 to +9 dB is "around" 10 dB which, as shown above, BS 4142 advises is "*more is likely to be an indication of a significant adverse impact, depending on the context".*

7.9. The example provided above includes the claim that with localised screening the impact with context will reduce to "small". No information is provided to describe the nature of the "localised screening" and its predicted performance in reducing the noise from this source or what the expected residual impact will be once the mitigation is in place.

7.10 It is therefore impossible to rely on the reference to localised screening as a means of avoiding significant adverse effects or mitigating and minimising adverse effects as required by policy; or to demonstrate that detrimental impacts on residential amenity will not occur and that the appellant has provided sufficient information to demonstrate that the adverse impact of the use on the residential amenities of the area could be successfully mitigated and controlled.

7.11 If the localised screening to the pole cutting bay the WIE report is referring to is the thin plastic strips providing a "curtain" to this area that I noted during my site visit on the 15th July. These are woefully inadequate as a means of mitigating the noise. The clear plastic material is not heavy enough and when coupled with the inevitable gaps between the strips means the "curtain" is effectively acoustically transparent and offer no meaningful resistance to the propagation of sound from the pole cutting bay to the nearby residential properties.

7.12 There is a dichotomy between the WIE and CA reports when it comes to acoustic character corrections. Whist the CA report expressly applies a +3dB penalty for tones, the WIE report applies no penalty for tones. Given the nature of some the noises generated on site such as pole and board cutting, in my professional opinion the CA approach is correct as it is very likely that such noises generated on site will have tonal content.

7.13 There is also a contradiction between the days and times used in the noise assessment in the WIE report and the planning application.

7.14 Paragraph of the WIE report describes the operation of the Masons sits as "*Saturday and Sunday operational hours are the same as Churchfields Reuse & Recycling facility, 07:30-16:00 and 08:00-13:00, although is it understood that Saturday yard operations are infrequent, and Sundays are only required if a vehicle returns late on a Friday or a Saturday i.e. it will be loaded during Sunday hours (08:00-13:00) ready for departure Monday morning*.".

7.15 I am advised that the planning application form states operating times will be 6am – 4pm Monday – Saturday, with no permission sought for operation on Sundays.

8. NOISE ASSESSMENT MODELLING INPUTS (WIE SECTIONS 6.1-6.2)

8.1 I have analysed the WIE noise model. I first outline the methodology used and then I make some technical points that illustrate the complexity of the calculation and that there are a number of underlying assumptions that have to be made about factors that influence the outcome of the calculation. I make clear that depending on these input assumptions any noise model is a snapshot of a particular set of circumstances. Consequently, the output of a noise model can vary considerably in favour of the appellant or the council depending on choices made about these inputs to the calculation.

8.2 It is my professional opinion that some of the input assumptions in the WIE model unduly favour the appellant's case and I demonstrate that more reasonable assumptions result in the higher predicted noise level from the Masons site than reported by WIE.

8.3 RBA have received and reviewed the model software files produced by WIE for the site using the Cadna A proprietary noise modelling software (the Environment Agency make it conditional on processing a permit application that the noise modelling software files are provided for scrutiny).

8.4 Although it is not made clear in the WIE report, from our scrutiny of the noise model software files we can confirm that modelling calculations were undertaken in accordance with the industry standard ISO 9613 (1996) Acoustics - Attenuation of Sound During Propagation Outdoors methodology, which is considered appropriate. The lack of this sort of detail supports the reason for refusal that the applicant "*has not provided sufficient information to demonstrate that the adverse impact of the use on the residential amenities of the area could be successfully mitigated and controlled*.".

8.6 I provide over the next 2 pages technical information to assist the Inspector, which is necessary because it shows the level of detail that should have been provided with the Appellant's workings so that the local planning authority would have been able verify if sufficient information had been provided to demonstrate that the adverse impact of the use on the residential amenities of the area could be successfully mitigated and controlled.".

8.5 The WIE model also includes the buildings and structures in the area and the site terrain, such as the railway embankment, which provides some screening of the noise from the Masons site to the receptors on Clock House Road, particularly at ground level.

8.6 ISO 9613: 1992 Pts 1 & 2: Acoustics - Attenuation of Sound Outdoors is the most commonly used methodology for predicting propagation of noise outdoors in software used for noise mapping. The standard was updated in 2024, but the changes from the 1992 version are not important in this case.

8.8 ISO 9613 specifies an engineering method for calculating the attenuation of sound during propagation outdoors, to predict the levels of environmental noise at a distance from a variety of sources.

8.9 The method specified in part 2 of IS0 9613 consists specifically of octave-band algorithms (with nominal mid-band frequencies from 63 Hz to 8 kHz) for calculating the attenuation of sound that originates from a point sound source, or an assembly of point sources. The source (or sources) may be moving or stationary. Specific terms are provided in the algorithms for the following physical effects:

- Attenuation over distance due to geometrical divergence A_{div} ;

  $A_{div} = [20 \log(d/d_0) +11]$ dB

  where: d= the distance from source to receiver (m) and d_0 is the reference distance (1 m)

- atmospheric absorption A_{atm} ;

  $A_{atm} = \alpha d/l\ 000$

  where; α = the atmospheric absorption coefficient ($dBKm^{-1}$), d = distance in kilometres

  Atmospheric absorption is affected by temperature and relative humidity and assumptions regarding these must be included in the calculation.

- ground effect A_{gr};
  $A_{gr} = A_s + A_r + A_m$

  Where A, = attenuation in the source region, A, = attenuation in the receiver region and A, = attenuation in the middle region

  Ground attenuation, Agr- is mainly the result of sound reflected by the ground surface interfering with the sound propagating directly from source to receiver. The standard advises that non-porous “hard” ground such as concrete, tarmac and tamped soil will efficiently reflect sound and lead to an increase in sound level at the receptor. Whereas porous “soft” ground such as grassed areas and vegetation will reflect less sound and lead to a reduction in sound level at the receptor.

  The method requires that the acoustic hardness or softness of the ground at the source, along the propagation pathway and the receptor are allocated a value from Zero, meaning acoustically hard ground with total reflection of sound, to 1 which represents acoustically soft ground which absorbs all the sound incident on the surface with no reflection.

  In practice the ground at the source, along the propagation pathway and receptor can often be of different acoustic hardness/softness and the standard allows for the selection of a ground effect value between 0 and 1 reflecting the proportion of each ground type e.g. a value of 0.5 would represent 50% hard ground and 50% soft ground.

- screening by obstacles A_{bar};

  Where A_{bar} is calculated using an algorithm considering diffraction over the top and around the edges of any barrier (transmission through the barrier is assumed to be negligible).

  Additionally, the methodology includes allowances for reflection of sound off surfaces in the vertical plane such as buildings and structures (reflections of the ground and in the horizontal plane are allowed for in the calculation of the ground effect)

8.10 The calculation of the equivalent continuous downwind octave-band sound pressure level at a receiver location, Ljr(DW), is calculated, using

$L_{ft}(DW) = Lw + Dc - A$

Where:

L_w, is the octave-band sound power level, in decibels, produced by the point sound source relative to a reference sound power of one picowatt (IpW);

D_c is the directivity correction, in decibels, that describes the extent by which the equivalent continuous sound pressure level from the sound source varies in a specified direction;

A is the octave-band attenuation, in decibels, that occurs during propagation from the source to the receiver.

8.11 The attenuation term A is given by

$A = A_{DIV} + A_{ATM} + A_{Gr} + A_{BAR} + A_{MIS}$

Where:

- A_{div} is the attenuation over distance due to geometrical divergence;
- A_{atm} is the attenuation due to atmospheric absorption;
- A_{gr} is the attenuation due to the ground effect;
- A_{bar} is the attenuation due to a barrier;

- A_{mis} is the attenuation due to miscellaneous other effects (none have been used in this case)

8.12 For most noise sources assessed, the significance of the attenuation in order of priority, with the greatest attenuation first is:

- Distance attenuation due to geometrical divergence
- Barrier attenuation
- Ground effect
- Atmospheric conditions

WIE modelling inputs

8.13 I consider the following modelling inputs by WIE underpredict noise propagation from the Masons site:

8.13.1 Ground Absorption:

- Has been set by WIE globally at 0.5 (all ground is 50% absorptive acoustically). The ground at the Masons site consists of concrete, tarmac and hard packed soil. This means the ground at the sources of noise on site and over the majority of the propagation distance between the site and the receptors is hard acoustically reflective ground. I therefore consider it appropriate to model the site area and roads at 0 (0% absorptive acoustically, 100% acoustically reflective "hard" ground) and the remainder of the surrounding area at 1 (100% absorptive acoustically 0% acoustically reflective, "soft ground"), which is more appropriate for the railway embankment and the gardens at the rear of the properties on Clockhouse Road grass respectively. Changing to these ground effect parameters adds around 2 decibels to the predicted noise levels at the receptors on Clockhouse Road.

8.13.2 Barrier Reflection:

- Barriers (such as the barrier to the eastern boundary of the neighbouring Re-use and Re-cycling Centre to the west of the Masons site) have not been assigned any acoustic reflection characteristics. Since these are likely to be reflective (i.e., increase noise transfer from the site to properties on Clock House Road), we would consider it appropriate to assign an increase in noise at these receptors of around 1dB due to reflection of Masons noise off the modelled barriers.

8.13.3 06:30 – 07:00 Heavy Vehicle Movements:

- The WIE report states that 3 heavy vehicle departures are modelled per 15-minute period. Whereas the model shows 9 per hour, although it should be 12 per hour. This results in an underestimate of around 1 dB in the predicted heavy vehicle noise.

- The operational times modelled are generally at the lower end of the range given (e.g., 30mins has been input, when the typical minutes per 1-hour were initially stated as 30-45 minutes), although the duration, regularity and locations input are considered appropriate. This underestimates the rating level by around 1 dB.

8.14 The above adjust of the calculation inputs results in a total discrepancy between the WIE and RBA predictions of up to around +5 dBA i.e. the RBA noise predictions are up to 5 dB higher than those presented by WIE.

9. NOISE ASSESSMENT MODELLING NOISE GRIDS (WIE SECTIONS 6.3-6.9)

9.1 Noise contours or "heat maps" produced by noise modelling software are produced by calculating noise levels at the intersection of points on a grid at a fixed height above ground level (AGL) and then linking points of equal noise level.

9.2 The noise grids used in the modelling by WIE are based on noise predicted at a height of 1.5 metres AGL. Whilst this is appropriate for receptors at ground floor level, the equivalent level predicted at first floor (and at the second floor mansard level present in a substantial proportion of the houses on Clockhouse Road) is higher due to the upper floor levels being less or not screened at all from site works by the railway embankment. Furthermore, an increase in level is predicted after changing the ground absorption and barrier reflection levels, as explained in the previous section.

9.3 In summary, the noise grids reported by WIE show less noise i.e. around 3 dBA, than would be calculated if first and second floors of the properties on Clockhouse Road were considered.

9.4 Examples of the difference in predicted $L_{Aeq,T}$ levels between the original WIE model and RBA's amended model are shown in the following sub-sections.

9.5 The consistent differences between the models (applicable to all following sub-sections and images) are modified ground absorption, barrier effects at first and second floor receptors and the addition of acoustic reflections off vertical surfaces i.e. the screen around the LBB refuse and recycling centre. All RBA models are based on a higher grid resolution of 5 metres by 5 metres, whilst the WIE models are based on a lower resolution of 10 metres by 10 metres. The higher grid resolution of 5x5m is more precise and representative of the predicted levels. Any other specific differences are described in each sub-section.

06:30 to 07:00 Hours Monday to Friday

9.6 The $L_{Aeq,15min}$ noise contours predicted at 1.5 metres AGL in the original WIE model and RBA's amended model are shown in Figure 1 and Figure 2. The RBA model also includes an increase from 9 heavy vehicle movements per hour to 12 movements per hour (as suggested in the WIE report, but not the WIE model, which uses 9).

Figure 1 – WIE Model 06:30-07:00 hours Monday to Friday (1.5m AGL)

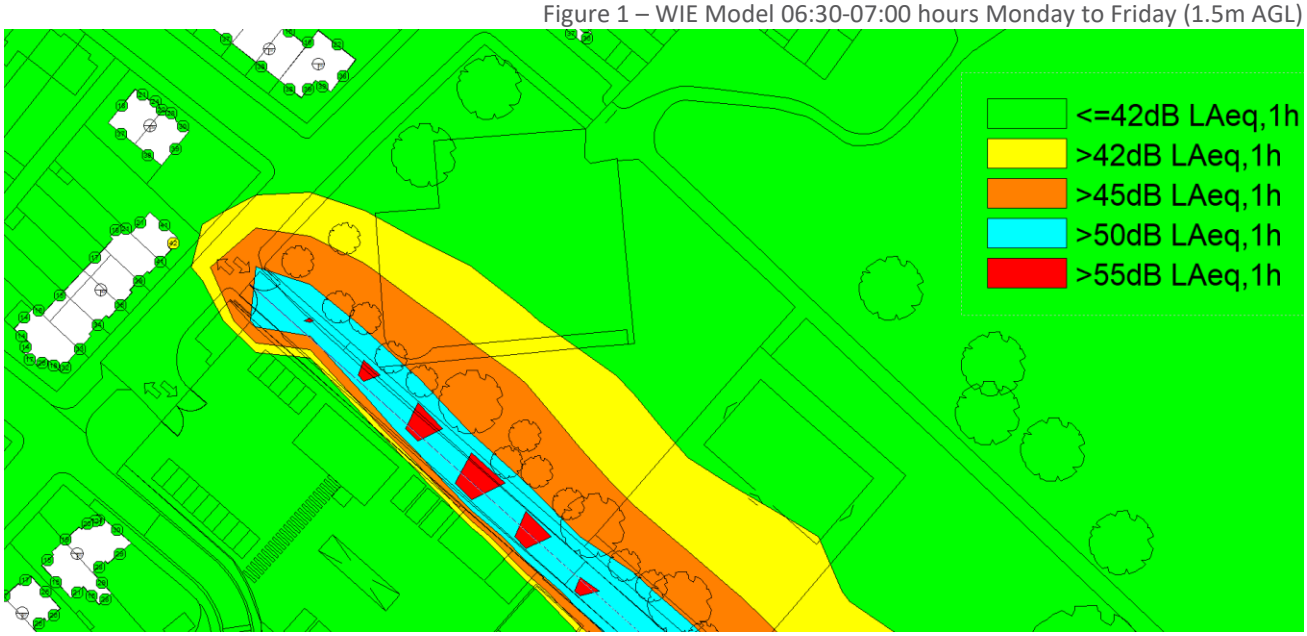
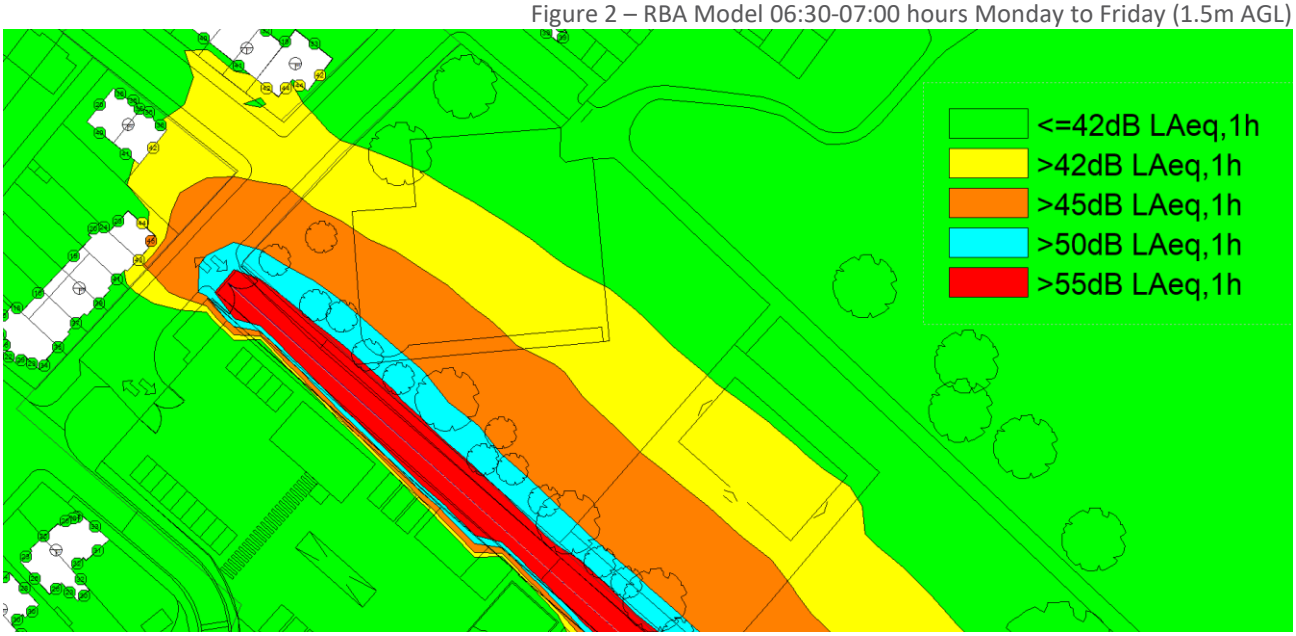


Figure 2 – RBA Model 06:30-07:00 hours Monday to Friday (1.5m AGL)



9.7 The above figures show the RBA predictions are for a higher noise level at receptors on Churchfields Road and Seward Road e.g. an increase of up to 3 dBA at 112 to 120 Churchfields Road and properties at the junction of Seward Road and Churchfields Road.

07:00 to 18:30 Hours Monday to Friday

9.8 The $L_{Aeq,1hour}$ noise level predicted at 1.5 metres above ground level in the original WIE model and RBA's amended model are shown below in Figure 3 through to Figure 6. Also shown are the levels predicted at 4 metres and 6.5 metres above ground level, to provide an indication of the levels predicted at 25 approximately first-floor and second-floor (mansard) respectively. All images are based on a 5x5m grid resolution.

Figure 3 – WIE Model (1.5m AGL)

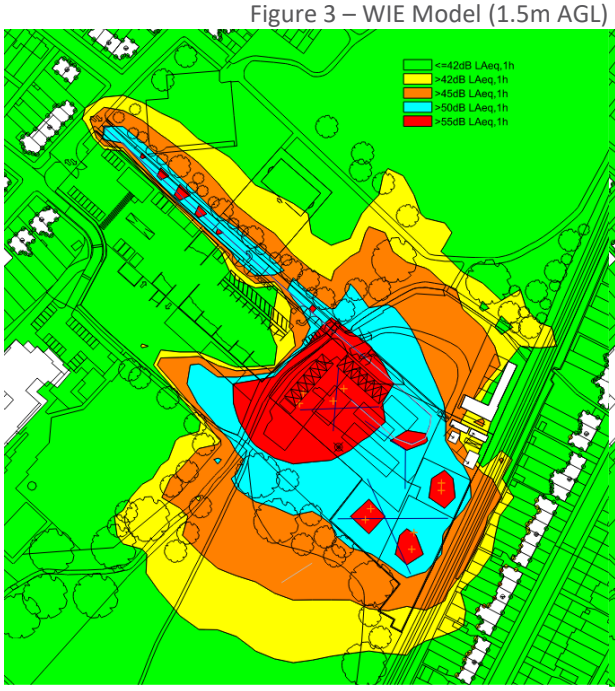


Figure 4 – RBA Model (1.5m AGL)

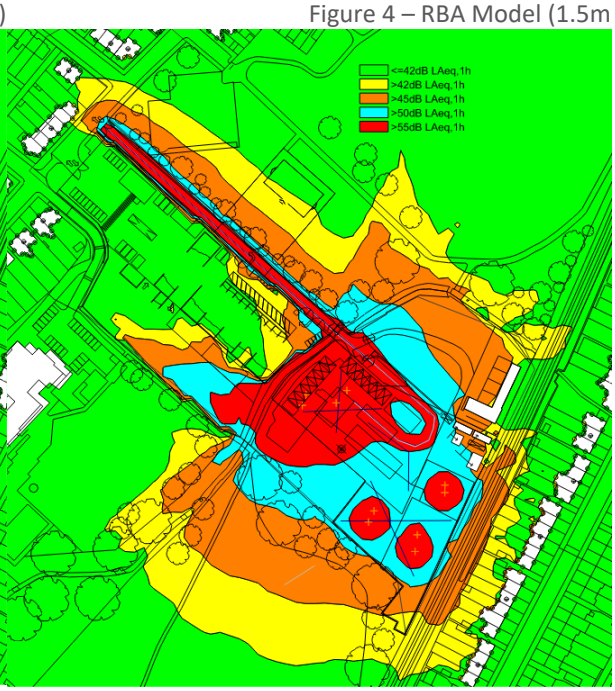


Figure 5 – RBA Model (1st floor 4m AGL)

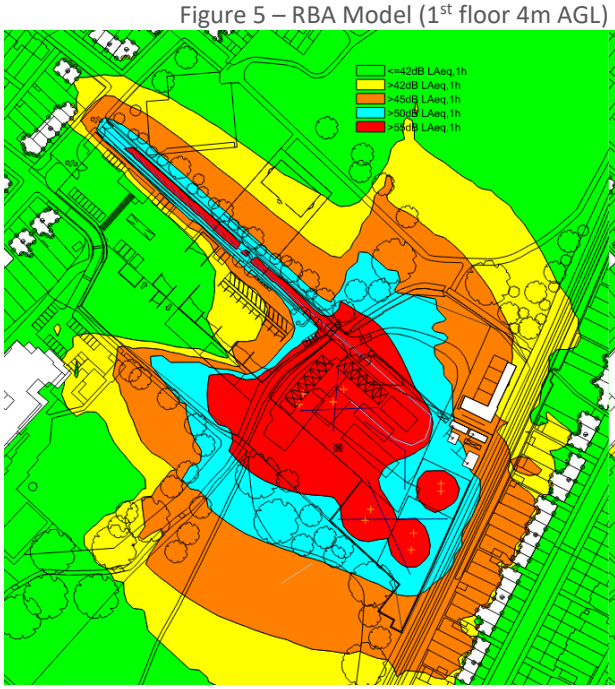
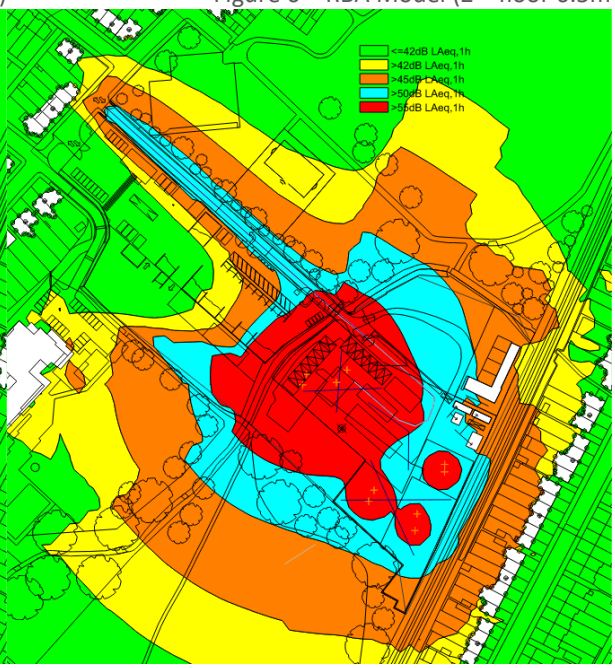


Figure 6 – RBA Model (2nd floor 6.5m AGL)



9.9 The disparity between the WIE and RBA models at 1.5m AGL is due to modifications to ground absorption and barrier reflection. The RBA model shows around a 2 dB increase in noise from the Masons site at the rear of properties on Clockhouse Road compared to the WIE model

9.10 The RBA models show an approximately 3 dB increase in noise at 4m and 6.5m AGL (particularly towards Clock House Road) compared to the WIE model at a height of 1.5 AGL, due to reduced screening from the railway embankment to receptor points at higher floors. The embankment acts as a partial barrier at ground floor level (typically approx. 1.5m AGL).

10. BS 4142 ASSESSMENT (WIE SECTIONS 6.10-6.22)

10.1 Table 6.1 in the WIE report provides a summary of their BS 4142 assessment. However, the last column of the table provides an evaluation of the "impact in context". This is a qualitative semantic description of the assessed magnitude of impact using terms such as "none, negligible, small, medium and low". Whilst the initial and the latter terms may be linked to the policy concepts of NOEL and LOAEL the terms "negligible, small, medium" do not appear in noise policy and no explanation is made in the WIE report what these impacts mean in policy terms.

10.2 Section 7.1 to 7.6 earlier in this evidence provides further scrutiny of the WIE interpretation of policy concepts such a NOEL, LOAEL and SOAEL, including an example of where WIE have underestimated a significant adverse impact and ranked it as "medium" capable of being reduced to "small" with unspecified local screening.

10.3 There follows a summary of the outcomes of the WIE BS 4142 assessment, considering the points made in the previous sections with regards to classification of the difference between rating level relative to background level, and the influence of RBA re-evaluation of ground absorption, barrier reflection, number of heavy vehicle movements during 06:30 – 07:00 and the calculation of noise levels at all floor levels of the nearby residential properties on the outcome of the assessment. When considering these factors, the subsequent RBA classification of impact has changed notably towards a more adverse outcome compared to the WIE assessment.

10.4 In terms of character corrections to allow for features in the noise emitted from the Masons site that enhance its impact, we would generally consider those adopted by WIE to be appropriate, which are +0dB for vehicle movements and +3dB for general activity during weekday working hours i.e., 'just' impulsive at the receptor.

10.5 However, WIE applied only +6dB correction for pole cutting at receptors on Clock House Road, understood to be +3dB for being 'just' impulsive and a further +3dB for being intermittent with no allowance for tonality in the noise.

10.6 Although WIE's third-octave band source noise measurements of the pole cutting did not indicate any tonal characteristics, I would as a minimum consider a further +2dB correction for a tone being 'just' perceptible at the receptor, given the nature of the noise source i.e. a metal circular saw cutting steel scaffolding poles akin to an angle grinder this is a precautionary value as a correction of up to and including +6 dB is possible for clearly audible tones; therefore totalling a total correction of +8dB for works with pole cutting.

10.7 For conciseness, only the upper end of the predicted range of values at each of Clock House Road and Churchfields Road receptors have been referenced in the tables below.

Table 9 – Comparative BS 4142 Assessment – Clock House Road Receptors

Receptor Location	Operational Period	Sound Level (dB)								RBA Classification of Impact
		Predicted Specific Sound Level, $L_{Aeq,T}$		Rating Level, $L_{Ar,T}$ (character correction in brackets)		Background Level, $L_{A90,T}$		Difference Rating Level minus $L_{A90,T}$		
		WIE	RBA	WIE	RBA	WIE	RBA	WIE	RBA	
Clock House Road	06:30-07:00 Monday to Friday	35	39	(+0) 35	(+0) 39	42	40	-7	-1	≤ LOAEL
	07:00-18:30 (without pole cutting) Monday to Friday	42	43	(+3) 45	(+3) 46		39	+4	+7	LOAEL to SOAEL
	07:00-18:30 (with pole cutting) Monday to Friday	45	46	(+6) 51	(+8) 54		39	+9	+15	> SOAEL
	22:00-05:00 OOH	31	34	(+0) 31	(+0) 34	30	30	+1	+4	≤ LOAEL to SOAEL
	Saturday 07:30-16:00,	32		(+0) 32		40	40	-8	-8	NOEL
	Sunday 08:00-13:00						36		-4	≤ LOAEL

10.8 The table above shows that the RBA BS 4142 assessment allowing for increased noise propagation due to ground effects etc, an additional correction +2dB for tones, 12 rather than 9 heavy vehicle movements and lower background noise levels indicates greater differences between the rating level of Masons sound and the representative background noise level than started in the WIE report. This show that the WIE report underestimates the impact of the noise from the Masons site.

Table 10 – Comparative BS 4142 Assessment – Churchfields Road Receptors

Receptor Location	Operational Period	Sound Level (dB)								RBA Classification of Impact
		Predicted Specific Sound Level, $L_{Aeq,T}$		Rating Level, $L_{Ar,T}$ (character correction in brackets)		Background Level, $L_{A90,T}$		Difference Rating Level minus $L_{A90,T}$		
		WIE	RBA	WIE	RBA	WIE	RBA	WIE	RBA	
Churchfields Road	06:30-07:00 Monday to Friday	42	45	(+0) 42	(+0) 45	42		0	+3	NOEL to LOAEL
	07:00-18:30 (without pole cutting) Monday to Friday	42	43	(+0) 42	(+0) 43			0	+1	NOEL to LOAEL
	07:00-18:30 (with pole cutting) Monday to Friday	42	43	(+0) 42	(+8) 51			0	+9	≤ LOAEL to ≤ SOAEL
	22:00-05:00 OOH	38	40	(+0) 38	(+0) 40	30		+8	+10	≤ LOAEL to ≤ SOAEL
	Saturday 07:30-16:00, Sunday 08:00-13:00	28		(+0) 28		40		-12		NOEL

10.9 The table above shows that the RBA BS 4142 assessment allowing for increased noise propagation due to ground effects etc, an additional correction +2dB for tones, 12 rather than 9 heavy vehicle movements and lower background noise levels indicates greater differences between the rating level of Masons sound and the representative background noise level than started in the WIE report. This show that the WIE report underestimates the impact of the noise from the Masons site.

10.10 Not all sounds of the same level have identical impacts. Acoustic features in a sound can mean it has a stronger impact on people compared to sounds of the same level but without such features. BS 4142 recognises the effect of acoustic features and provides corrections that can be applied to the establish the rating level depending on whether such features are present and the magnitude of the feature.

10.11 BS 4142 recognises the following acoustic features can attract a correction.

- Tones e.g. discrete frequencies of a sound that are heard above the rest of the noise e.g. whirrs, hums, whistles, grating sounds etc. A correction of up to +6 dB can be applied.
- Impulsive elements e.g. where a sound goes from not being audible to being audible over a fraction of a second e.g. bangs, clangs and scarping sound typically from materials coming into contact suddenly. A correction of up to +9dB
- Intermittency e.g. where a noise source stops and starts, repeatedly this can attract a penalty of 3 dB.

10.12 Regarding BS 4142 corrections for tonality and impulse characteristics I consider that WIE have underestimated the degree of tonality of the pole and scaffold board cutting, and my addition of a +2dB "just tonal" correction is probably a cautious underestimate. Although WIE have used a 1/3 octave band measurement method suggested in BS 4142, the Environment Agency's Method Implementation Document for the Standard (CD11.05) and the Association of Noise Consultant's technical Note for BS 4142 (CD11.06) both comment that this approach can underestimate tones in sound.

10.13 The ANC technical note also comments that:

"*There is little available psychoacoustic model evidence or widely established subjective response data underpinning the one-third octave method*."

And.

"The reference method for the assessment of tonal noise in BS 4142 is the Joint Nordic 2 method, which is based on the critical band model of masking tones by noise. This model has been developed and refined from extensive subjective testing and analysis and is considered to be robust and defensible given the current knowledge base."

10.14 The BS 4142 recommended "reference" methods for assessing tones and impulsive elements of sound apply finer resolution assessments of the frequency and time profiles of the sound in question. WIE haven't done this and therefore have potentially underestimated the size of corrections required for tonality and impulse characteristics in the sound emitted from the Masons site.

10.15 The pole cutting area on site is in a three-sided bay formed from scaffolding and corrugated iron or similar panelling on three side. The open side of the bay faces Clockhouse Road. This opening is provided with a cover formed from light weight plastic strips with limited if any noise attenuation i.e. the plastics strips are effectively acoustically transparent.

10.16 The WIE report mentions "localised screening" to the pole cutting area as a noise mitigation measure. I assume that this is not the thin plastic strips in place at the moment as these are not effective and are effectively acoustically transparent. However, no details are provided of the proposed mitigation, and it is not possible to evaluate its effectiveness and establish to what degree the policy aims of avoiding significant adverse effects and mitigating and minimising adverse effects of the noise will be possible; and detrimental impacts on residential amenity appropriately managed.

11. HEAVY VEHICLE NOISE IMPACTS CHURCHFIELDS ROAD

11.1 The source data used by WIE for the assessment of the peak noise from heavy vehicle leaving the site onto Churchfields Road is $L_{max,fast}$ 82 dBA at 2 metres. Whilst this is in the range I would anticipate for heavy vehicles cruising constantly at 10 mph and no acceleration. I would expect the level to be higher when accelerating in a low gear with higher engine revs from a stop to a higher speed, as it would when turning on to Churchfields Road from the site access Road. This is reflected in various road noise prediction methods e.g. HARMONOISE, Nord200 and CNOSSOS road traffic noise prediction methods that apply correction of up to around 6 dBA for accelerating heavy vehicles compared to the same vehicles in free-flowing traffic conditions.

11.2 An assumed distance of 7.5 metres from the heavy vehicle leaving the site access road onto Churchfields Road is more appropriate when considering the distance from the turning point in the centre of Churchfields road to the nearest receptor; as opposed to from the site boundary, where a distance of 15 metres has been used by WIE. This reduced distance from the heavy vehicle results in a predicted level 6 dB higher than the WIE predicted $L_{Amax,fast}$ 64 dBA at the receptor, with the level expected to be 70 dBA. With the vehicle accelerating as it pulls out of the access road and along Churchfields Road, the level is likely to be higher than this as the engine is revving harder in a lower gear than the free flowing traffic on this road. Assuming a window partially open for ventilation this results in an equivalent level of $L_{Amax,fast}$ 55 to 60 dBA[2] in bedrooms facing the access road, which is higher than the guideline of 45 dB $L_{Amax,fast}$ recommended by the World Health Organisation Community Noise Guidelines.

11.3 During a call on the 14th July WIE advised they have carried out a survey of noise from vehicles using the Churchfields Road access road. A summary of this noise survey has been provided[3] the results from which are reproduced below.

"A noise survey and traffic count was conducted on Churchfields Road opposite the access road to Masons Scaffolding on the morning of Thursday 3rd July 2025 near 120 Churchfields Road . Table 1 presents a summary of the measured noise levels and Table 2 presents a summary of the traffic counts.

Table 1: Summary of Measured Noise Levels {author's emphasis}

Time Period	dB LAeq,1 min (log average)	**dB LAFmax**	dB LAFmax, 90th perc	dB LA10,1min ave	dB LA90,1 min avg	Total Volume	No. HGVs
06:06-06:15	62	**82**	80	61	44	17	0
06:15-06:30	60	**80**	79	60	44	32	0
06:30-06:45	63	**80**	79	64	48	40	7
06:45-07:00	62	**81**	78	62	46	50	3
07:00-07:14	66	**86 (bus)**	81	65	48	70	3

11.4 The above demonstrates that the WIE report underestimated the noise from vehicles accessing and leaving the Masons site by up to around 16 decibels i.e. the measured levels are around three times as loud as predicted.

11.5 The $L_{Amax,fast}$ levels measured by WIE are 80 dBA or over, which is a recognised threshold for conscious awakening[4] and is likely to be cause significant adverse effects on sleep between 0630 and 0700 hrs for residents on Churchfields Road living directly opposite the access road to the Masons Site.

11.6 I visited Churchfields Road on Thursday 17th July and Friday 18th July between 0545 and 0730 hrs and observed similar noise levels to those WIE have provided above.

[2] BS 8223 advises that a façade to a room with a window partially open provides around 10 to 15 decibels noise reduction.
[3] By email from Mark Maclagan on the 15th July 2025
[4] Ollerhead J B et al (1992); Report of a Field Study of Aircraft Noise and Sleep Disturbance. Department of Transport, December 1992.

12. UNCERTAINTY

12.1 Every measurement and prediction has an element of uncertainty associated with it.

12.2 The uncertainty associated with measurements and predictions does not necessarily mean they are incorrect. It just means they may not accurately represent the whole truth. Understanding these uncertainties is critical when making assessments of impact.

12.3 The sources of uncertainty in this case to include the following:

- Source noise levels
    - Distance from measuring position to source – subtle errors in establishing the distance from the source to measurement position can lead to underestimation of the true amount of noise emitted.
    - Directivity – the source may emit noise at different intensities at different positions around the item from the circumstances in which the source levels were established.
    - Operating duration – the item may operate for different periods to those assumed in the assessment
    - Different machine operators – different operators may create different amounts of noise with the same plant/operation

And.

- Propagation conditions
    - The positioning of sources – noise sources could be closer to receptors than assumed in the assessment and noise levels therefore higher.
    - The height of receptors – screening of the Mason Site by the railway embankment will reduce at the first floor and be negligible at the second floor of the houses on Clockhouse Road.

12.4 Precisely establishing a quantified uncertainty value e.g. +/- X dB is difficult, but a qualitative evaluation of the risk is more readily undertaken i.e. low, medium or high.

13. CONCLUSIONS

13.1 The appellant's noise assessment understates the impact of operations at the Masons site both in terms of the intensity of the noise e.g. the noise levels are likely to be higher than the appellant's advisers have predicted and the background noise levels against which they are evaluated are lower; and the spread of impact e.g. the WIE report does not consider impacts above ground level at first and second floor where reduced screening of the Masons yard to the rear of the properties on Clockhouse Road means higher noise levels that at ground level.

13.2 RBA have re-modelled the propagation of noise from the Masons site and found that the total discrepancy between the WIE and RBA noise predictions is up to around +5 dBA i.e. the RBA noise predictions are up to 5 dB higher than those presented by WIE. As a consequence, the adverse effects and significant adverse effects of the noise from the Masons site increase, with some noises WIE rate as NOEL crossing into the LOAEL category, and the magnitude of some sounds which are rated as SOAEL intensifying. This further demonstrates that noise from the Masons site is likely to be detrimental to residential amenity and that the adverse noise impacts of the use have not been adequately mitigated.

13.3 At table 10.9, I have shown that for residents at Clockhouse road, WIE have underestimated the noise impact, classifying noise generated between 0700 and 1830 without pole cutting as below LOAEL, whereas my analysis raises to be above LOAEL and biased towards "SOAEL". With pole cutting the WIE assessment is below SOAEL, but my evaluation takes the impact above SOAEL.

13.5 At table 10.10 I have shown similar conclusions for residents at Churchfields Road i.e. without pole cutting noise the rating in the WIE report is below LOAEL, but my assessment is to above LOAEL and biased towards SOAEL.

13.6 During two visits to a residential property on Clockhouse Road directly opposite the Mason Site to install and collect noise measuring equipment for a baseline noise survey I have heard noises of metal on metal contact from the Masons site similar to what I have heard elsewhere from scaffolding poles banging together. In my view these noises were detrimental to residential amenity.

13.7 RBA's evidence predicts greater impacts than the WIE report, particularly during early mornings and when pole cutting. Consequently, both significant adverse and adverse effects are greater than described in the WIE report.

13.8 The pole cutting area on site is in a bay formed from scaffolding and corrugated iron or similar panelling on three side. The open side faces Clockhouse Road. This opening is provided with a cover formed from light weight plastic strips with limited if any noise attenuation i.e. the plastics strips are effectively acoustically transparent.

13.9 The WIE report mentions "localised screening" to the pole cutting area, but no details are provided of the proposed mitigation, and it is not possible to evaluate its effectiveness and establish to what degree the policy aims of avoiding significant adverse effects and mitigating and minimising adverse effects of the noise will be possible.

13.10 The appellant has not demonstrated that noise from the operation of the site will not be detrimental to residential amenity or that the adverse noise impacts of the proposed use can be adequately mitigated. The information that has been provided in both the first application stage CA report and in the later WIE report lacks sufficient information and clear methodology for a reasonable audit of the assessment of effects to take place.

14. SUMMARY

14.1 Key Planning and Policies and Acoustic Standards Referenced

- Noise Policy Statement for England (NPSE)
- National Planning Policy Framework (NPPF)
- Planning Practice Guidance (Noise)
- The London Plan (Policies D13 & D14)
- LB Bromley Local Plan (Policies 37 & 119)
- BS 4142:2014+A1:2019 – Method for rating and assessing industrial and commercial sound.

14.2 RBA Baseline Noise Survey

- Conducted by RBA Acoustics at a residential property on Clockhouse Road opposite the Masons site.
- Measured LAeq, LA90, and LAmax noise levels over 7 days.
- Witnessed noise from metal on metal impacts from the Masons site at higher levels than noise from the Recycling and Refuse site.
- Found that train noise, while prevalent, was short lived, infrequent and absent for the substantial majority of the time.
- RBA's measured background levels were lower than those used by the appellant (WIE), implying greater potential impact from the predicted site noise.

14.3 Review of Appellant's (WIE) Noise Assessment

The WIE noise modelling methodology used CadnaA software and the prediction methodology from ISO 9613. This is generally appropriate.

However, key issues identified include:

- Underestimated ground acoustic reflectivity and barrier reflections resulting in underprediction of noise at residents.
- Heavy vehicle movements undercounted in early morning hours resulting in underprediction of noise at residents.
- WIE have only predicted noise level from Masons site at ground level (1.5 m AGL) and not considered the equivalent noise levels at upper floors (1st and 2nd) at the rear of properties on Clockhouse Road, which are likely to be higher than WIE have predicted at ground floor due to reduced screening to these higher floors of noise generated at the Masons site by the railway embankment.
- WIE have underestimated the impact of the pole cutting noise by not applying a correction to allow for tonality in this noise source.

14.4 Noise Modelling by RBA

RBA have adjusted the noise modelling to allow for:

- More reflective ground surfaces.
- Barrier reflections.
- Increased heavy vehicle activity.
- Assessment at the rear of houses along Clockhouse Road at first and second floor that overlook the Masons site.
- Included a correction for tones in the pole cutting noise.

Therefore, RBA has found higher noise levels at sensitive receptors than WIE have predicted.

14.5 Noise Assessment

I have recalculated noise impacts using inputs corrected to take the above into account and I have found:

- Increased impacts compared to the WIE report.
- Weekday daytime noise (with pole cutting) exceeded SOAEL (Significant Observed Adverse Effect Level).

Noise from heavy vehicles leaving the site onto Churchfields Road prior to 0700 hrs

- The WIE report underestimated the peak $LA_{F,max}$ levels from heavy vehicles turning on to Churchfields Road.
- WIE have subsequently measured levels up to 82–86 dB $LA_{F,max}$, which exceed thresholds for sleep disturbance and awakening. I have observed similar noise levels from heavy vehicles leaving the Masons site. Consequently, early morning (06:30–07:00) heavy vehicle movements from the Masons site are likely to cause sleep disturbance. This represents significant adverse effects on resident's sleep between 0630 and 0700 hours.

RBA ACOUSTICS
W. www.rba-acoustics.co.uk
E. info@rba-acoustics.co.uk

London:
44 Borough Road
London SE1 0AJ
T. +44 (0) 20 7620 1950

Manchester:
Bloc, 17 Marble Street
Manchester M2 3AW
T. +44 (0) 161 661 4504